Low Voltage Transfer via Ultra Stable Power Supply

INTRODUCTION

Power as an electric field source of electrophoresis was always regarded as an impossible problem for the bad performance. Commonly, it was taken as merely the provider of voltage or current. In fact, stability of a power indeed plays a vital role in providing constant electric field. It will not only affect the separation ability of the PAGE, but also specifically affect the transfer efficiency in the blotting system. Choosing of correct power supply should be the first thing prior to do the experiment.

EQUIPMENTS AND MATERIALS

- ELITE 200 and ELITE 300 plus (Wealtec)
- V-GES (Wealtec)
- E-Blotter and Yrdimes for Western blot (Wealtec)
- KETA ML imaging system (Wealtec)
- True RMS Multi-meter (Fluke)

PROCEDURES

1. Run the 12% SDS-PAGE with series diluted ProMarker.
2. Transfer the protein samples from SDS-PAGE onto PVDF membranes with E-Blotter and Yrdimes.
3. In E-Blotter system, transfer the sample with ELTE 300 plus at 100 V for 1 hour and 15 V for 18 hours, respectively.
4. For Yrdimes systems, using of fast transfer buffer to transfer the samples with ELITE 200 power at 25 V for 10 minutes and 5 V for 60 minutes, respectively.
5. Stain the membrane and SDS-PAGE with Coomassie Brilliant Blue.
6. Observe the result with KETA ML imaging systems.
7. Measure the voltage and current change of the ELITE 300 plus power with True RMS Multi-meter during 4 hours operation.

RESULTS

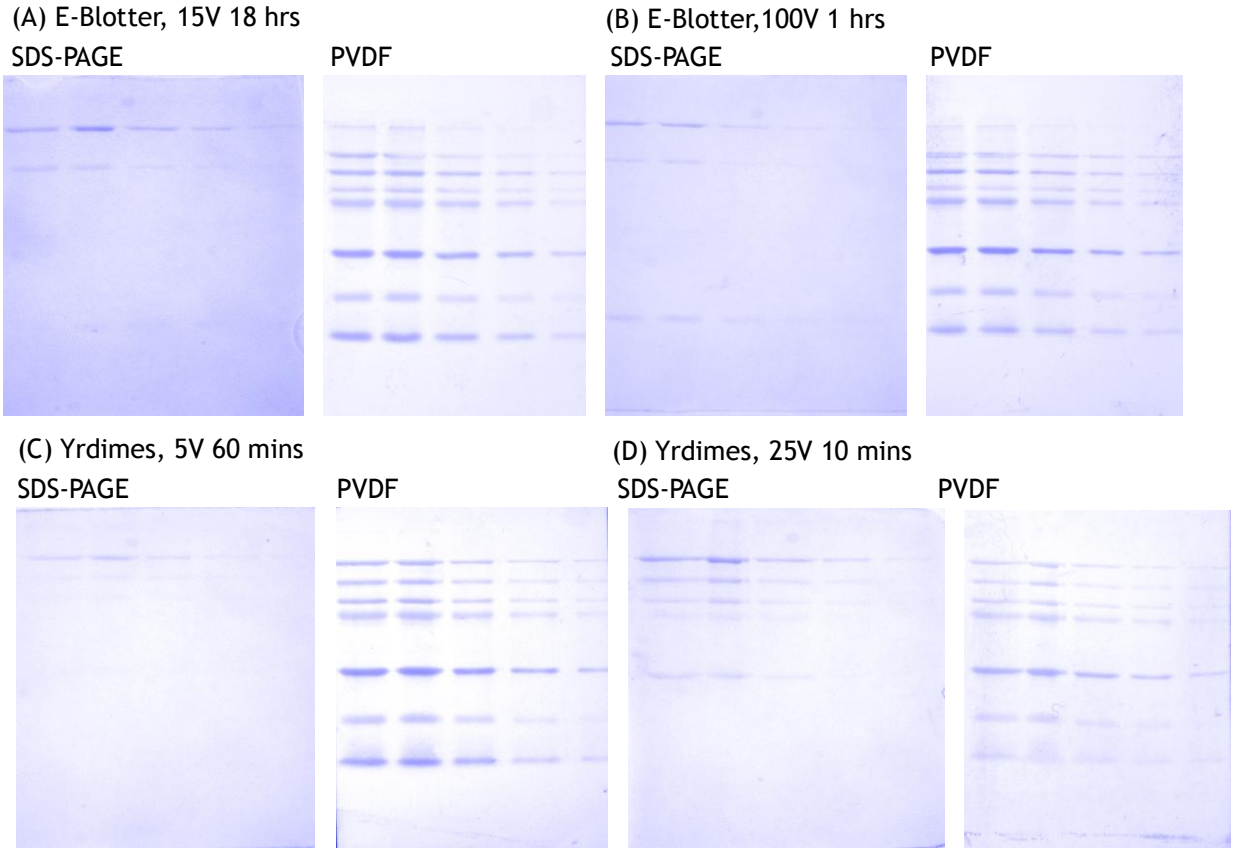

Figure 1. Transfer efficiency of *ProMarkers with (A)(B) E-blotter and (C)(D) Yrdimes with low voltage, long time transfer on the left (A)(C) and normal transfer condition on the right(B)(D).*

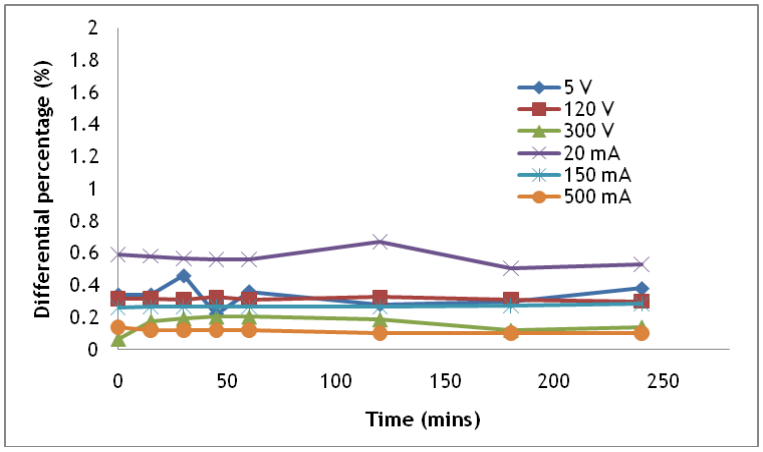

Figure 2. *Voltage/current change of ELITE 300 plus during four hours operation.*

DISSCUSION

As in the *fig*. 1, transferring samples from SDS-PAGE to the PVDF membranes was taken as a standard sample to illustrate how the voltage affects the transfer efficiency. Using of the E-Blotter and Yrdimes to transfer can both get the different performance comparing of normal condition and intensify condition. According to the result, transferring with lower voltage with longer time can get better transferring efficiency both on large size and small size protein samples. During operating of low voltage to transfer the protein samples, the stability of the power supply plays an important role in maintaining the same voltage during operation. As illustrate in the *fig*. 2, Wealtec Power supply can provide very stable low voltage/current for sample transferring. Within 4 hours operation, the voltage/current changing difference in ELITE 300 plus will be all less than 1%. In the other words, Wealtec ELITE 300 plus Power supply can apply users the most stable power source for sample transferring with <0.05 V differences when setting at 5 V and <0.2 mA when setting at 20 mA. According to this stability data, Wealtec ELITE power supply was guaranteed to provide the most stable power source for each user to apply on variable experiments.

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